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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,064	07/25/2001	Takahiro Oka	TAI 129	3312

23995 7590 03/20/2002

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1101 14TH STREET, NW
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WASHINGTON, DC 20005

EXAMINER

ERDEM, FAZLI

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 03/20/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,064

Applicant(s)

OKA ET AL.

Examiner

Fazli Erdem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1,2,4,5,7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (6,077,724) in view of Ishio et al. (6,118,184).

Regarding Claim 1, Fig 4F of Chen shows a first semiconductor 22 on whose surface electrodes 223 for wiring is formed, a second semiconductor device 21 on whose surface bump 213 and solder balls 27 are formed as contact points, and the first semiconductor device and the second semiconductor device are integrated and mounted with respective reverse surfaces of the first semiconductor chip and the second semiconductor chip opposing one another.

Fig 2 of Ishio et al. shows two similar semiconductor chips 1a and 1b with electrodes on their surfaces.

Regarding Claim 2, Fig 4F of Chen shows a lead 241 in which a through hole is formed at a position corresponding to the electrode for wiring on the second semiconductor chip, a second semiconductor chip 21 is fixed to a surface of the lead at a portion of the lead at 23, the reverse surface of the first semiconductor chip is fixed to the reverse surface of the second

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semiconductor chip and contact points 213 and 27 for wiring for the second semiconductor chip is exposed at a reverse side of the lead.

Fig 2 of Ishio et al. shows two similar semiconductor chips 1a and 1b with electrodes for wiring on their surfaces.

Regarding Claim 4, in Fig 4F of Chen, the through hole is larger than the semiconductor chip 22 but smaller than the semiconductor chip 21.

Regarding Claim 5 and 7, Fig 4F of Chen shows a region 24 sunken-in from the leads 241 and a through hole is provided in this sunken-in region.

Fig 2 of Ishio et al. shows two similar semiconductor chips 1a and 1b with electrodes for wiring on their surfaces.

Regarding Claim 9 and 11, Fig 4F of Chen shows an interposer formed of narrow band lead. In this case examiner takes the definition of tape to be a “narrow band”.

It would have been obvious to one of having ordinary skill in the art to include electrodes for wiring in the second chip of Chen as taught by Oshii because electrodes for wiring would provide outside electrical connectivity.

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2. Claim 3, 6, 10, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (6,077,724) in view of Ishio et al. (6,118,184) and further in view of Jeng et al. (6,133,067)

Regarding Claim 3, Fig 4F of Chen covers all the limitations of claim, including epoxy adhesive 222 and 23 that cover the through hole, except it fails to show that through hole is larger than the both semiconductor chips

Fig 3F of Jeng et al. shows a similar two semiconductor chips 11 and 12 whose sizes are less than the gap created in the middle of lead 14.

Regarding Claim 6, Fig 4F of Chen shows a sunken in region 24 of lead 241 and where the through hole is provided at the sunken-in region

Regarding Claim 10, Fig 4F of Chen shows an interposer formed of narrow band lead. In this case examiner takes the definition of tape to be a "narrow band".

Regarding Claim 13, in Fig 4F, items 25 and 23 are epoxy type adhesives which become viscous when heated.

It would have been obvious to one of having ordinary skill in the art to have a through hole that is bigger than the both semiconductor devices as shown by Jeng et al. because such structure would provide better flexibility.

3. Claim 8, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (6,077,724) in view of Ishio et al. (6,118,184) and further in view of Kitaoka et al. (5,523,608)

Regarding Claim 8, Fig 4F of Chen and Fig 2 of Ishio et al. show all the limitations of this claim except adhesive material being larger than the chip size of the second semiconductor chip.

Fig. 1 of Kitaoka et al. shows two semiconductor chips 1 and 6 being bonded together by an adhesive paste whose size is larger than second semiconductor chip 6.

Regarding Claim 12, Fig 4F of Chen shows an interposer formed of narrow band lead. In this case examiner takes the definition of tape to be a "narrow band".

Regarding Claim 14, Fig 4F, items 25 and 23 are epoxy type adhesives which become viscous when heated.

It would have been obvious to one of having ordinary skill in the art to provide an adhesive material that is larger than the second semiconductor chip when bonding a first and a second semiconductor chip because this would provide a stronger bonding between the two chips.

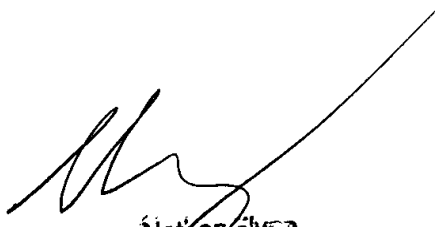
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (703) 305-3868. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

FE
March 14, 2002



Nathan Flynn
Primary Examiner